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“ Description of Four New Species of *Rocinela*, with a Synopsis of the Genus,” by Miss Harriet Richardson.

“ An Old Broadside, with a Reference to the Throne of Congress,” by Mr. Julius F. Sachse, which was discussed by Messrs. McKean, Rosengarten, Hildeburn and Sellers.

The meeting was adjourned by the presiding officer.

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## DESCRIPTION OF FOUR NEW SPECIES OF *ROCINELA*, WITH A SYNOPSIS OF THE GENUS.

BY HARRIET RICHARDSON.

(*Read January 21, 1898.*)

### I.

The species of *Rocinela* here described were collected by the steamer *Albatross*, of the U. S. Fish Commission, during its various cruises in different localities. One of the species herein described comes from the Alaskan coast; another is from the coast of Cuba, off Havana, and the third comes from the southern part of the Gulf of California.

The new species exhibit unique characters not found in any other representatives. One, *R. cornuta*, has the antero-lateral angles of the first thoracic segment extended forward on each side of the eyes, but not touching them, thus giving the head the appearance of being immersed or deeply set in this segment. Another, *R. tuberculosa*, presents a row of small tubercles on the posterior margin of each one of the thoracic and abdominal segments of the body. In *R. cubensis*, the frontal margin of the head is greatly produced into a large rounded process with a concave surface.

The genus *Rocinela* is now known to include nineteen species,<sup>1</sup> of which nine were included in the monograph published in 1880

<sup>1</sup> *R. lilljeborgii* Bovallius (*Bihang Sv. Ak. Handl.*, 1885, Vol. x, No. 10, pp. 3–10, Pls. 1, 2) has been referred to the genus *Syscenus* Harger, and identified with *S. inflexis*, Harger's type species (G. O. Sars, “An Account of the Crustacea of Norway,” Vol. ii, *Isopoda*, Pls. iii, iv, pp. 67, 68).

by Schiødte and Meinert,<sup>1</sup> and the others in the order hereinafter noted.

- R. danmoniensis* (pp. 383–389, Tab. xi, Fig. 1).  
*R. insularis* (p. 390, Tab. xii, Figs. 1–3).  
*R. dumerili* (pp. 391–393, Tab. xii, Figs. 4–6).  
*R. maculata* (pp. 393, 394, Tab. xii, Figs. 10–12).  
*R. americana* (pp. 394, 395, Tab. x, Figs. 16–18).  
*R. orientalis* (pp. 395, 396, Tab. xiii, Figs. 1, 2).  
*R. australis* (pp. 397–399, Tab. xii, Figs. 13–15).  
*R. signata* (pp. 399–401, Tab. xiii, Fig. 3).  
*R. aries* (pp. 401–403, Tab. xiii, Figs. 7, 8).  
*R. alaskensis* (= *Æga alaskensis* Lockington). “Description of Seventeen New Species of Crustacea,” Lockington, *Pro. Cal. Acad. of Sciences*, 1876, Vol. vii, Pt. i, p. 46, 1877.  
*R. vigilans*. “On Some New Australian Marine Isopoda,” W. A. Haswell, *Proceedings of the Linnean Society of New South Wales*, 1880, Vol. v, p. 472, Pl. 16, Fig. 2.  
*R. oculata*. “Reports on the Results of Dredging, under the Supervision of Alexander Agassiz, on the East Coast of the United States, during the Summer of 1880, by the U. S. Coast Survey Steamer *Blake*, Commander J. R. Bartlett, U. S. N., Commanding,” xxiii, “Report on the Isopoda,” Oscar Harger, *Bull. Mus. C. Z.*, 1883, Vol. ix, No. 4, pp. 97–99, Pl. 3, Fig. 2.  
*R. spongiocola*. “Notes on Tasmanian Crustacea with Descriptions of New Species,” George M. Thomson, *Papers and Proceedings of the Royal Society of Tasmania*, 1892 (1893), pp. 57, 58, Pl. 3, Figs. 3–8.  
*R. laticauda*. “Reports on the Dredging Operations off the West Coast of Central America to the Galapagos, to the West Coast of Mexico, and in the Gulf of California, in charge of Alexander Agassiz, carried on by the U. S. Fish Commission Steamer *Albatross*, during 1891, Lieut.-Commander Z. T. Tanner, U. S. N., Commanding,” xxii, “The Isopoda,” H. J. Hansen, *Bull. Mus. C. Z.*, 1897, Vol. xxxi, No. 5, p. 108, Pl. 3, Figs. 2, 3.  
*R. modesta*., *op. cit.*, p. 109.  
*R. cornuta*, sp. nov.

<sup>1</sup> Symbolæ ad monographiam Cymothoarum, Crustaceorum, Isopodum, Familiæ,” J. C. Schiødte et Fr. Meinert, *Naturhistorisk Tidsskrift*, 1879–1880, Vol. xii, pp. 383–403, Pls. 10–13.

*R. cubensis*, sp. nov.

*R. japonica*, sp. nov.

*R. tuberculosa*, sp. nov.

## II.

Analytic key of all the known species of *Rocinela*, with the addition of four new species.

- a. Eyes contiguous.
  - b. Head produced into process in front . . . *R. oculata* Harger.
  - b'. Head not produced into process in front.
    - c. Flagellum of second pair of antennæ as long as peduncle. .
      - R. spongicola* Thomson.
    - c'. Flagellum of second pair of antennæ more than twice as long as peduncle . . . . . *R. vigilans* Haswell.
  - a'. Eyes not contiguous.
    - b. Flagellum of second pair of antennæ with 14–16 joints.
      - c. Eyes close together.
        - d. Head with frontal area excavated, bicarinated, front roundly produced with raised margin . . . . .
          - R. danmoniensis* Leach.
        - d'. Head without median excavation, not bicarinated . . .
          - R. insularis* Schicedte and Meinert.
      - c'. Eyes widely separated.
        - d. Propodus of prehensile legs with two to four spines.
          - e. First thoracic segment with antero-lateral angles produced horn-like at sides of head . . . . .
            - R. cornuta*, sp. nov.
          - e'. First thoracic segment normal.
            - f. Frontal margin of head produced.
              - g. Head tuberculated . . . . *R. cubensis*, sp. nov.
              - g'. Head not tuberculated.
                - h. Head with frontal excavation.
                  - i. Front bicarinated. . . . *R. dumerilii* Leach.
                  - i'. Front not bicarinated . *R. japonica*, sp. nov.
                - h'. Head without frontal excavation . . . .
                  - R. modesta* Hansen.
              - f'. Frontal margin of head not produced.
                - g. Terminal segment of body linguate; both branches of the uropods crenulate on their exterior margins.

- h. Spots present on both sides of the fourth thoracic segment . . . . .  
*R. maculata* Schiœdte and Meinert.
- h'. Spots wanting on fourth thoracic segment.
- i. Spots present on fourth and fifth abdominal segment and base of terminal segment. .  
*R. alaskensis*<sup>1</sup> (Lockington).
- i''. Spots wanting on fourth and fifth abdominal segments and terminal segment . . . . .  
*R. americana* Schiœdte and Meinert.
- g'. Terminal segment of body subtriangular; branches of uropods not crenulate on their exterior margins. *R. orientalis* Schiœdte and Meinert.
- d'. Propodus of prehensile legs with five or six spines.
- e. Increase in breadth of abdomen from base to fourth segment . . . . . *R. laticauda* Hansen.
- e'. No increase in breadth of abdomen from base to fourth segment . . . *R. australis* Schiœdte and Meinert.
- b'. Flagellum of second pair of antennæ with ten or eleven joints.
- c. Tubercles developed on all the segments of the body . . . .  
*R. tuberculosa*, sp. nov.
- c'. No tubercles developed on body.
- d. Terminal segment of body ornamented with a pair of narrow semi-lunar bands separated by a longitudinal stripe . . . . . *R. signata* Schiœdte and Meinert.
- a'. Terminal segment of body ornamented with a very wide crescentiform band, from whose posterior border three large hastiform stripes project backwards.  
*R. aries* Schiœdte and Meinert.

*Aega belliceps* Stimpson (*Proc. Ac. Nat. Sci., Philadelphia, 1864*, xvi, p. 155), is also undoubtedly a *Rocinela* and may even prove to be identical with *Rocinela alaskensis* (Lockington) in which case the proper name will be *Rocinela belliceps*.

<sup>1</sup>*Aega alaskensis* Lockington (*Proc. Cal. Academy of Sciences, 1876*, Vol. vii, Pl. i, p. 46, 1877) must be referred to the genus *Rocinela*, as it agrees in every respect with the characteristics of that genus. When identifying *Aega alaskensis* Lockington with *Rocinela*, I found in conversation with Dr. Benedict that he had already recognized this relation.

## III.

*Rocinela cornuta*, sp. nov. Figs. 1, 2.

Length of body, two and one-quarter times its greatest breadth. Outline, oval; surface smooth, with scattered points of depression.



FIG. 1.—Head,  
X 1½.

Head subtriangular, having a medium excavation. Its frontal margin is produced forward in a long and broad projection, widely rounded at its extremity, and curving upward. Eyes large and situated at some distance apart. The first antenna reaches the anterior margin of the first thoracic segment; its flagellum contains six articles. The second antenna extends to the posterior margin of the second thoracic segment; its flagellum is sixteen-jointed.

The thoracic segments are subequal. The antero-lateral angles of the first segment are greatly produced and extend forward a little less than half the length of the head, including the projection. These antero-lateral projections of the first segment do not follow closely the lines of the head, but rather extend out straight in a direction which is parallel to that of the frontal projection of the head. The extremities of these projections are rounded. The epimera of all the segments point downward and do not extend beyond the post-lateral angle of their respective segments with the exception of the sixth and seventh ones.

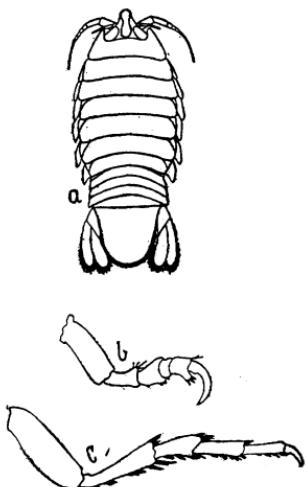


FIG. 2.—a. *Rocinela cornuta*, ♂, slightly reduced.  
b. Leg of first pair, X 4.  
c. Leg of fourth pair, X 4.

is faintly crenulate. The two branches of the uropods are similar in shape and size; the inner branch, being the longer, reaches the extremity of the abdomen. The uropods as well as the abdominal segment are furnished with hairs.

The podopodus of the prehensile feet is armed with three spines,

The first segment of the abdomen is almost entirely covered by the seventh thoracic segment. The last segment is rounded posteriorly and

and three blunt ones are found on the merus. The gressorial feet are long and slender and covered with spines.

*Type*.—The type specimen was found off Shumagin Bank, Alaska, Station 3338, 625 fathoms (U. S. Nat. Mus., No. 20086).

*Rocinela cubensis*, sp. nov. Figs. 3, 4.

Outline of body oval, surface smooth.

Head with rounded lateral margins. Its anterior margin is produced forward in a large rounded projection, whose breadth is equal to its length, and whose upper surface is deeply concave with upturned edges. This projection extends forward for about half its length and then upward, the change in direction being gradual. Eyes large and composed of ten rows of ocelli. Two small tubercles are situated between the eyes, and in the middle of the head and back of these is an arc-shaped depression. The first antenna reaches the posterior margin of the head; its flagellum contains six articles. The second antenna extends to the posterior margin of the third thoracic segment; its flagellum contains fifteen articles.

The thoracic segments are subequal in length. The epimera are long and narrow, with very acute posterior angles.

The first segment of the abdomen is almost entirely concealed by the last thoracic segment. The fifth is likewise covered at the sides by the fourth segment. The last abdominal segment is triangular in shape with a rounded posterior margin. The outer branch of the uropods is very broad and oar-shaped, with a rounded extremity. The inner branch is long and slender, of equal breadth throughout its length and rounded on its posterior margin. The inner branch is the longer one. Both are fringed with hairs.

In the prehensile legs of this species the basis presents a row of tubercles on its superior margin. There are two spines on this propodus and three on the merus. The gressorial legs are but slightly spinulose.



FIG. 3.—Head.

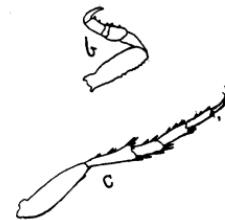
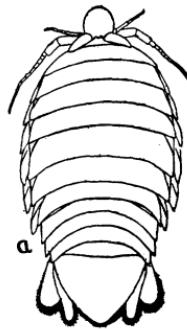
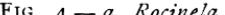


FIG. 4.—a. *Rocinela cubensis*, ♂,  $\times 2\frac{1}{4}$ .  
b. Leg of first pair,  
 $\times 4\frac{1}{2}$ . c. Leg of  
fourth pair,  $\times 4\frac{1}{2}$ .



*Type*.—The type specimen was found off Havana, lat. N.  $23^{\circ} 11'$ , long. W.  $82^{\circ} 19' 6''$ , Station 2341, 143 fathoms (U. S. Nat. Mus., No. 20087).

*Rocinela laticauda*, Hansen<sup>1</sup> Fig. 5, 6.

Head, with a median projection, long and broad, extending slightly downward and having a blunt extremity.

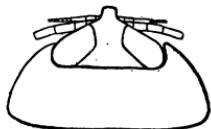


FIG. 5.—Head  $\times \frac{2}{3}$ .

Eyes large, with ten rows of ocelli. The first antenna, with a flagellum containing six articles, reaches the posterior margin of the head. The second antenna extends to the middle of the second thoracic segment; its flagellum contains fifteen articles.

The thoracic segments are equal in length. The first is deeply bisinuated, its antero-lateral angles extending up the side of the head to about the middle of the eyes. The epimera of the second, third and fourth segments are rounded posteriorly; those of the remaining segments have pointed extremities.

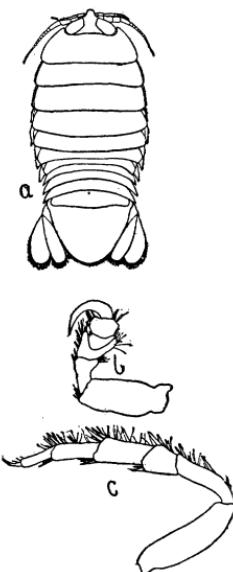


FIG. 6.—a. *Rocinela laticauda*, ♂, slightly reduced. b. Leg of first pair,  $\times 4$ . c. Leg of fourth pair,  $\times 4$ .

The first segment of the abdomen is almost entirely covered by the last thoracic segment. The fifth segment, as well as this one, is narrower than the intervening segments, and not as broad as the base of the terminal segment. The last segment is widely rounded posteriorly and is fringed with rough hairs which almost conceal its crenulated margin; at the base it is impressed on either side of a keeled centre; the outer branch of the uropods is almost twice as broad as the inner branch; they are about equal in length. Both are fringed with hairs and indistinctly crenulate.

The prehensile legs are stout and short. There are four spines on the propodus and five on the merus, besides numerous hairs. The gressorial legs are likewise stout and furnished with spines and hairs.

<sup>1</sup> The description of the above species was written and the drawings made when Dr. Hansen's type specimen was returned to the U. S. Nat. Mus., and his manuscript sent to the press. As there are a few differences in the specimens, it was thought best to publish the new description.

The specimen described came from Alaska, off Unimak Island, Station 3225, 85 fathoms (U. S. Nat. Mus., No. 20088).

*Distribution.*—One specimen was found off San Luis Obispo Bay, California, Station 3195, 252 fathoms; one off Esteros Bay, California, Station 3194, 92 fathoms, and another at Puget Sound, Washington, Station 3067, 82 fathoms. The specimens from the coast of California are smaller in size and of very much lighter color than the other specimens. They are similar in other respects. Dr. Hansen's type specimen is from Acapulco, Mexico, Station 3418. It differs from the specimen herein described in the length of the second pair of antennæ, which extend to the middle of the third thoracic segment, while in the specimen we have described they extend only to the middle of the second thoracic segment; in the broader and longer terminal segment of the body, and in the increased number of spines on the propodus, and the decreased number of spines on the merus of the prehensile legs.

*Rocinela japonica*, sp. nov. Fig. 7–9.

Surface of body punctate and covered with black or brown dots. Color yellow, marked lightly in such a way as to present a mottled appearance. At the base of the terminal segment of the body, there are two small spots of brown, separated by a distance equal to half the width of the segment. Head subtriangular, excavated in the centre between the eyes and having the lateral margin in front of the eye produced into a lobe; the extreme front being truncate with rounded angles and curving slightly upward. The lobe in front of the eye extends half way between the eye and the extreme front. The eyes, which are small, are separated by a distance of half the width of the head. The first antenna, with a flagellum of six joints, reaches the posterior margin of the head. The second antenna, with a flagellum of fifteen joints, extends to the posterior margin of the second thoracic segment.



FIG. 7.  
Head,  $\times 1\frac{1}{3}$ .

The epimera of all the segments of the thorax are acute, the posterior angles more rounded in the first two, but sufficiently pointed, in the remaining four. The epimera of the last two segments take a more oblique direction than the preceding ones, and extend laterally as far as the outer margins of the abdominal segments.

The first abdominal segment is almost entirely covered. The posterior angles of these segments are very acute and are produced

at the sides beyond the terminal segment and the basal joints of the uropods. The terminal segment is linguate and obscurely crenulate on its posterior margin. The internal branch of the uropods is somewhat longer than the external one, but the two are equal in width. They are both armed with spines on their outer margins.

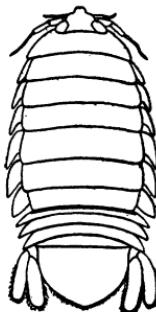


FIG. 8.—*Rocinela japonica*, ♂,  $\times 1\frac{1}{3}$ .

The prehensile legs are slender. There are three or four hair-like spines on the propodus and five blunt ones on the merus. The gressorial legs are likewise slender and spinulose.

Of this species a single individual was found at Hakodate Bay, Japan, Station 3659, depth fifteen and a half fathoms (U. S. Nat. Mus., No. 20651).

This species is closely related to *R. modesta* Hansen. It differs from that species in the length of the first pair of antennæ, which extend only to the middle of the last joint of the peduncle of the second pair of antennæ, while in *R. modesta* Hansen they extend a little beyond the peduncle of the second pair of antennæ; in the greater development of the lateral margin of the head in front of the eye into lobes; in the excavation in the frontal area of the head; in the extreme front being directed upward; in the number of spines on the merus of the prehensile legs, five spines being characteristic in our species, three or four in Dr. Hansen's species; in the markings on the surface of the body of small black dots and the presence of two larger spots at the base of the terminal segment of the body.

FIG. 9.—Leg of first pair,  $\times 3$ . Leg of fourth pair,  $\times 3$ .

*Rocinela tuberculosa*, sp. nov. Fig. 10.

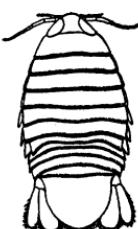


FIG. 10.—*Rocinela tuberculosa*, ♂,  $\times 2\frac{1}{3}$ .

Surface of body punctate and marked with small black dots. The posterior margin of each of the thoracic and abdominal segments is lined with a row of tiny tubercles, above which is a row of small black dots.

Head subtriangular, rounded in front. Eyes large and situated at a distance of one-third of the head apart. The first antenna, with a flagellum of five articles, reaches the posterior margin of the head; the second antennæ extends to the posterior margin of the second thoracic segment; its flagellum contains eleven articles.

The posterior margin of all the thoracic segments is edged with a row of small tubercles. The epimera are narrow, those of the second, third and fourth segments being rounded at the top, while those of the last three segments are more acute.

The first abdominal segment is entirely concealed by the last thoracic segment. The second, third, fourth and fifth segments are likewise edged with a row of small tubercles. The last segment is widely rounded. The outer branch of the uropods is somewhat narrower and shorter than the inner one and is rounded at its extremity. The inner one is bluntly rounded. Both are fringed with hairs, and on their exterior margins are armed with spines. The prehensile legs have three long, stout spines on the merus and two on the propodus. The gressorial legs are covered with spines.

Two individuals of this species were found in the southern part of the Gulf of California, at Station 2824, eight fathoms, type (U.S. Nat. Mus., No. 20652), and Station 2828, ten fathoms.

## SPECIALIZATIONS OF THE LEPIDOPTEROUS WING ; THE PIERI-NYMPHALIDÆ.

(Plates I-III.)

BY A. RADCLIFFE GROTE, A.M.

*(Read January 21, 1898.)*

An immediate incentive to the present study is the statement, in *Evolution and Taxonomy*, that we find, in the Nymphalidæ, "an even greater specialization of the wings than exists in the Pieridæ." It may be premised that Prof. Comstock's classification unites in one family two seemingly distinct types under the term Nymphalidæ. Also that the neuronal character given in the more recently issued "Manual" of the same author for the Pieridæ would exclude the Leptidianæ. The two wing types of the Nymphalidæ of Mr. Scudder and Prof. Comstock overlap. The Nymphalidæ proper, as I would limit the family, have vein  $iii_4$  of the fore wings thrown off upon the external margin below apices throughout all the leading groups. But in the Fritillaries, which seems to be the most generalized group, there are genera, like Euptoieta, in which this vein reaches the apex, as in all the other brush-